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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,030	09/24/2003	Zining Wu	MP0309	2654

26703 7590 10/12/2005

HARNESS, DICKEY & PIERCE P.L.C.  
5445 CORPORATE DRIVE  
SUITE 400  
TROY, MI 48098

EXAMINER

OLSON, JASON C

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/671,030

Applicant(s)

WU ET AL.

Examiner

Jason C. Olson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.  
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 3-8, 11-16, 19-24, 27-32, 35-40, 43-48 and 51-56 is/are allowed.  
6) ☒ Claim(s) 1, 2, 9, 10, 17, 18, 25, 26, 33, 34, 41, 42, 49, 50 and 57-68 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 59-68 are rejected under 35 U.S.C. 101 because claims 59-68 are drawn to a “program” *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 10, 17, 18, 33, 34, 41, 42, 49, 50, 58-60, and 68 are rejected under 35 U.S.C. 102(b) as being anticipated by Carlson et al. (US 5,909,330), hereafter Carlson.

Regarding claims 9, 17, 33, 41, 59, and 68, Carlson teaches a storage medium (see figure 1, item 14); a head (see figure 1, item 18); a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium (see col. 6, ln. 42-47 and col. 8, ln. 4-9); a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time (see col. 8, ln. 9-16) and one or more second amplitudes of the pulse at respective second predetermined times (see col. 8, ln. 16-20); a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes (see col. 6, ln. 35-42 and col. 8, ln. 20-33).

Regarding claims 10, 18, 34, 42, and 60, Carlson teaches the function of the first and second amplitude is a ratio of the first and second amplitude (see col. 6, ln. 47-49).

Regarding claims 49, 50, and 58: method claims 49, 50, and 58 are drawn to the method of using the corresponding apparatus claimed in claims 9 and 10. Therefore method claims 49, 50, and 58 correspond to apparatus claims 9 and 10 and are rejected for the same reasons of anticipation as used above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 25, 26, 57, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson and Good et al. (US 5,377,058), here after, Good.

Regarding claims 1 and 25, Carlson teaches a storage medium (see figure 1, item 14); a head (see figure 1, item 18); a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium (see col. 6, ln. 42-47 and col. 8, ln. 4-9); a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time (see col. 8, ln. 9-16) and one or more second amplitudes of the pulse at respective second predetermined times (see col. 8, ln. 16-20); a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes (see col. 6, ln. 35-42 and col. 8, ln. 20-33). Carlson fails to teach a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit, however, Good is relied upon to teach a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit (see col. 3, ln. 60-67 and col. 5, ln. 2-19 of Good). It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon flight height determination of Carlson by applying the teaching of

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controlling flight height as taught by Good for the purpose of optimally controlling the flight height to a desired level.

Regarding claims 2 and 26, the combination of Carlson and Good teach the function of the first and second amplitude is a ratio of the first and second amplitude (see col. 6, ln. 47-49 of Carlson).

Regarding claims 57 and 67, Carlson teaches all the limitations of claims 49 and 59 above, but fails to teach controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium, however, Good is relied upon to teach controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium (see col. 3, ln. 60-67 and col. 5, ln. 2-19 of Good). It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve upon flight height determination of Carlson by applying the teaching of controlling flight height as taught by Good for the purpose of optimally controlling the flight height to a desired level.

***Allowable Subject Matter***

Claims 3-8, 11-16, 19-24, 27-32, 35-40, 43-48 and 51-56 are allowed. Regarding claims 3, 11, 19, 27, 35, 43, and 51 the prior art fails to teach alone or in combination the function of the first and second amplitudes is a ratio of the first amplitude to a sum of at least two second amplitudes. Regarding claims 4, 12, 20, 28, 36, 44, and 52 the prior art fails to teach alone or in combination the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of at least two second amplitudes. Regarding claims 5, 7, 13, 15, 21, 23, 29,

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31, 37, 39, 45, 47, 53, and 55 the prior art fails to teach alone or in combination the second amplitudes comprise a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse and a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse. Regarding claims 6, 14, 22, 30, 38, 46, and 54 the prior art fails to teach alone or in combination the second amplitudes comprise an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse. Regarding claims 8, 16, 24, 32, 40, 48, and 56 the prior art fails to teach alone or in combination a previous amplitude determined from the one of the samples immediately preceding the  $n - 1$  of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and a succeeding amplitude determined from the one of the samples immediately succeeding the  $n - 1$  of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

### ***Response to Arguments***

Applicant's arguments, see pages 53-55, filed 08/02/05, with respect to the rejection(s) of claim(s) 1-4, 9-12, 17-20, 25-28, 33-36, 41-44, 49-52, 57-62, 67, and 68 under 35 U.S.C. 102(b) as being anticipated by Good et al. (US 5,377,058) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Carlson et al. (US 5,909,330) and Good et al.

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*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason C. Olson whose telephone number is (571)272-7560. The examiner can normally be reached on Monday thru Thursday 7:30-5:30; alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (571)272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCO  
October 4, 2005



DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600